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Experimental coal mine for Wollongong

THE DEVELOPMENT of an experimental coal mine for Wollongong, itself the centre of a major coal field, is under consideration. The aim of the project is to focus attention on safety in mines through research into the cause and suppression of full-scale gas and coal explosions.

The concept is not new. Similar mines exist overseas. But with Australia by the turn of the century taking its place as probably the second-largest exporter of coal, the time to embark on such a project is now.

It is proposed that the project will be developed and operated jointly between The University of Wollongong and the NSW Department of Mineral Resources, and the Queensland Government Department of Mines.

It is proposed too that the mine be located near Wollongong for at Wollongong is the only university in NSW that offers mine engineering where there are local mines. Moreover, there is in this area possibly the largest gathering of professional coal-mining engineers in Australia. In fact, the university itself is sited within a coal field that will be worked for many years.

Although the mine would be basic to the Department of Coal and Mining Engineering, the University has many departments that have expertise in this area of study. The mine would also be basic to other university establishments in the state, apart from the CSIRO and other research bodies, and obviously including the 'mines' people from both the NSW and Queensland governments.

So far, with assistance from the coal industry, the University has made a detailed study of all available areas and existing local workings — even to opening up old workings. No existing workings have been found suitable. Current proposals are therefore to locate a site and build the required rock structure — as the USA Bureau of Mines has done in Pittsburgh and at Lake Lynn.

The University has attracted two NEARDDC grants for associated work:

computer simulation of mine ventilation problems with fires, methane emission, smoke and temperature problems, and basic explosion work.

There is considerable basic justification for an experimental mine on the lines proposed. As a result of explosions underground some collieries have been destroyed and over 1,000 men killed. One of the most recent NSW mine explosions resulted in the deaths of 14 men, and estimated loss of production to the value of \$6 million. There was, too, damage to equipment, and the introduction of more restrictive laws.

No work of the type envisaged for the experimental mine has been carried out in

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Artist wins Study Grant

MERION POWELL, the well-known accompanist and conductor, has won a grant from the Queen Elizabeth II Silver Jubilee Trust Fund. She left on March 7 to study at the Guildhall School of Music and Drama in London under the direction of internationally known conductors and accompanists.

The late Dr W. Primrose C.B.E. considered Merion to be 'one of the brightest prospects in the realm of the difficult and demanding art of accompanying'.

Merion has just completed a contract with the Institute of Advanced Education

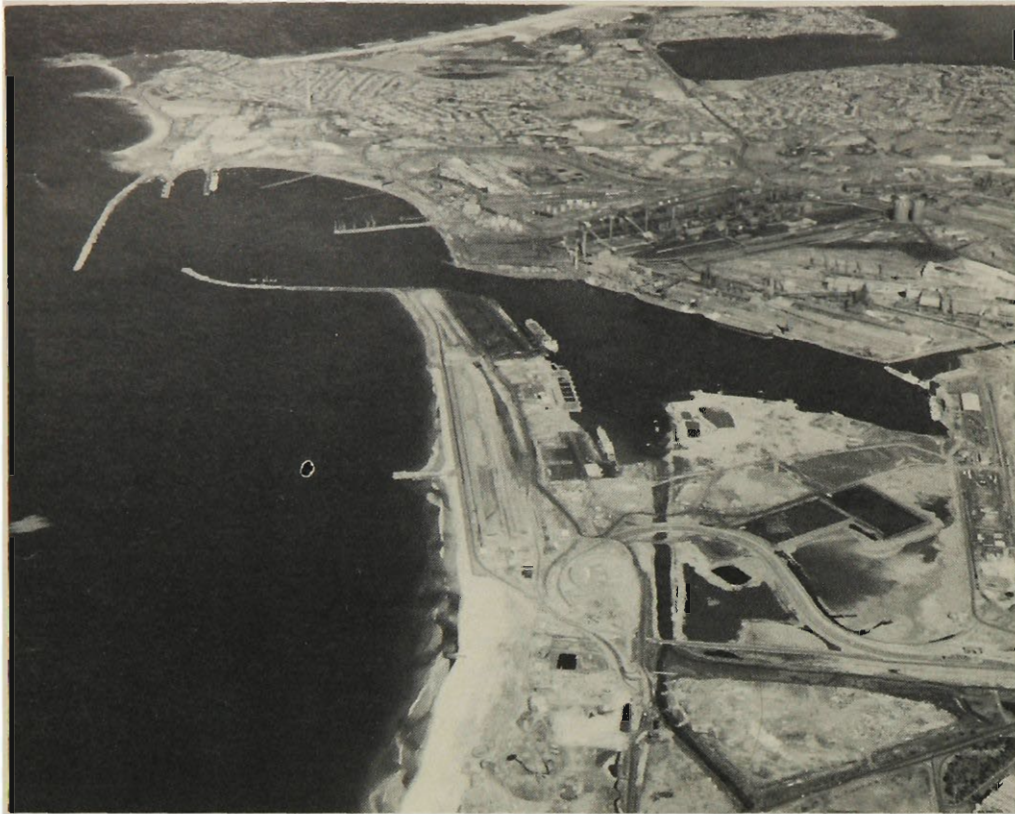
at the University for the inaugural year of the Associate Diploma in the Arts. She has delayed undertaking overseas study because of her involvement with local musical activities. The Wollongong community know her well as the Musical Director of the Conservatorium Theatre Company and will remember such productions as Jesus Christ Superstar, Man of La Mancha, The Wiz, Pippin, and West Side Story. She was a member of the staff of the Wollongong Conservatorium from 1974-82 and the Sydney Conservatorium from 1979-80.



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PORT KEMBLA — A DOWNWARD SPIRAL?



Aerial view of Port Kembla (picture courtesy of The Maritime Services Board)

DESPITE some dampening of demand for coal in the past year, exports have increased significantly over the decade and the commissioning of the new coal loader in November 1982 gives the port of Port Kembla a middle-order ranking — in terms of draft requirements for shipping — not too dissimilar from those of Hay Point in Queensland, Quebec and Gdansk, for example, though behind those of Roberts Bank in Canada and Richards Bay in South Africa.

But an overdependence on coal exports, on the imports of large volumes of iron ore and the exports of iron and steel, renders the port — as it does the regional economy — highly susceptible to the vagaries of the market.

Further, the significant technological

changes in shipping and port handling (especially the development of containerisation in and the centralisation of container services on the port facilities in Botany Bay) have effectively removed general services from the port. In 1981-82, 515 ships called at the port, 404 fewer than in 1971-72; and of these only 23 were classified as general cargo ships. In 1981-82 also, both the number of ships which called at Botany Bay (603) and their capacity (11.4 m GRT) exceeded that for Port Kembla.

Moreover, a high level of industrial

disputation has eroded the confidence of shipowners and users of the port.

The port has suffered, too, together with the city and the region, from ad hoc, often contradictory and ill-timed policies and inadequate decision-making mechanisms. A new coal loader can handle efficiently large quantities of coal; large vessels reduce per unit transport costs. But the landside road and rail networks are inefficient and inadequate; new rail lines, rather than being commissioned at the same time as the loader, are still under discussion; road transport policies are flexible — is it two or four million tonnes to be transported by road? (Not that it matters since both limits have been and are being consistently exceeded!)

In an attempt to provide a more adequate information base for policy-makers and a better understanding of the function and potential of the port, current research in the University of Wollongong is focussing on a number of themes —

- * regional multiplier effects and port, industry and regional growth linkages
- * the mechanics of decision-making for the provision of coal transport infrastructure
- * the dimensions and 'depth' of the decline in shipping services and general cargo throughput and
- * alternative strategies for longer term development.

Crisis and conflict, in the development of ports as for people, generate responses which may lead to significant changes. For Port Kembla the convergence of economic reality and political expediency must provide, in 1983, exceptional conditions for significant restructuring of the port's functions and operations. A depressed regional economy, a politically sensitive state government seat, a less-militant union climate, strong regional initiatives for change, significant economic advantages in moving grain and western coal through the port via new and upgraded rail links might all be interpreted as providing a positive scenario for change.

Ross Robinson

Experimental Coal Mine — from page 1.

Australia. Indeed, Australia extrapolates the flow of information from overseas to fit the Australian scene. Within a few years, results from tests carried out in the experimental mine should contribute to a reduction in deaths in the industry from gas and coal explosions and point to areas where greater production might safely be undertaken.

Many consider that it is in the national interest to have an experimental mine in Australia, and most would argue that it should be located in NSW, because of the state's predominance in underground coal mining — and the likely increase in such activities for many decades to come.

Other activities basic to the experimental mine could include:

- * 'guarding' the standards of safety in the mining industry as far as unions are

concerned

*to let the unions know that they have an independent institute or centre which understands problems and is studying them all the time

*to understand and disseminate information from overseas

*to be an independent arbitrator

*to monitor and maintain contact with similar research bodies throughout the world

*to advise the Minister and give expert advice

*to give advice to industry

*to solve current problems in mines as appropriate

*to be a centre for training and educating research workers for the coal-mining industry.

Bill Upfield

This is the first issue of *The University of Wollongong Gazette*. The aim of the journal, which will appear quarterly in the first instance, is to provide a bridge between this university and the community. Thus editors of national, regional and local newspapers are invited to make free use of material published. There is no copyright. Further information on articles will be willingly provided by a telephone call to authors, all of whom are members of the academic staff, or to the editor, George Wilson — tel (042) 28 2886



Wayne Dixon performing on the Centre for the Arts' new harpsicord in Crown Central, Wollongong

Less Steel – but more Soul

THE past two years have seen a quite dramatic growth in the university's Visual and Performing Arts.

The growth began when Dr Peter Rousch — the then new director of the Institute of Education — brought fresh insights to the Wollongong scene. He saw that the troubled steel city lacked significant tertiary development in the arts. And he moved immediately to promote activity within the Institute to fill the gap.

The ball began rolling when three lecturers spent three weeks in the middle of 1980 visiting institutions in NSW and Queensland where Arts courses at an Associate Diploma Level were being taught. Arising from this a team led by Dr Michael Koder, the Institute's Deputy Director, prepared a submission for the Higher Education Board. A probing

advertisement produced over 400 serious inquiries about the projected courses.

At the end of 1981 the Higher Education Board gave its approval for a course to be implemented in 1982. And thus the Associate Diploma in the Performing Arts was born.

The nature of the course is predominantly practical. The first intake of students was offered a choice from

- Musicology/Musicianship
- Instrumental Studies
- Music Theatre Opera
- Acting
- Production — in the Performing Strand and
- Painting and Textiles — in the Visual Strand

Catering for full-time or part-time study, the course calls for a significant focus by

The Centre for the Arts has organised a dynamic display of lecturers' and students' spinning, weaving, painting and operating a pottery wheel. Included also are displays of theatrical costumes, photography and general information about the University.

Another shot from the Crown Centre display — Morley Grainger, suitably dressed, and suitably cheerful, gives an exhibition of loom weaving



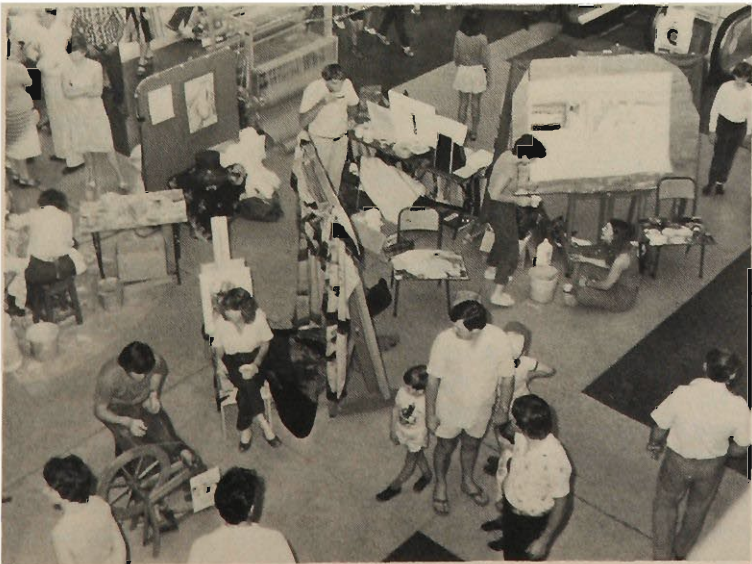
students on a chosen major study, yet it allows for variety by choice of minor studies with a real opportunity to spread across both Performing and Visual strands.

The success of the first year has been irrefutable with a 75 per cent holding rate by the end of 1982 well ahead of similar courses elsewhere. Pressure for entry into the 1983 course became evident last October. As we close for press some 86 students have been enrolled.

Ceramics has been added as a major study. And the possibilities for further development in these areas of the arts are rapidly being realised.

Rodney Hollands

Left below: At the Crown Centre Arts students and staff in operation for the public. Right: In the grounds of the Institute, Howard Mitchell, on the left, and students seek shade while sketching



Technology and Social Change Task Force

IN contemporary society, technological change is woven closely into the structure of industry — and therefore of production and employment.

And in Australia today critical decisions are being made about the future of technology in our society. There are grave concerns, on the part of governments and the community, about how to expand industrial productivity and develop new export-oriented industries through technological change, and how to evaluate and adjust to the social and economic consequences.

However, for the vast majority of people in Australia, technology remains tantalisingly obscure — familiar in its manifestations as a power station, a car or a television set, but mysterious in the ways in which it is secretly developed and shaped —

to burst suddenly on an unsuspecting world.

If we are to make sensible and informed decisions about the role of technology in our society, we need first a much wider comprehension of the nature of technology and, secondly, the capability to evaluate and analyse the process of technological change.

These are the objectives of the TASC force (Technology and Social Change) at The University of Wollongong. The unit is made up of an interdisciplinary group of academics spanning the applied sciences, the social sciences and the humanities, who have brought together their accumulated expertise and research commitments to develop a programme of research on technological change and its social context. Their first task has been to carry out a

comprehensive analysis of the role of technological change in Australia. The analysis is to be published in April this year by Queensland University Press under the title *Future Tense* (editors Stephen Hill and Ron Johnston).

This analysis at the national level is linked with a regional project, which takes the decaying industrial base and economic fabric of Wollongong as a case study. Earlier analysis shows that the pattern of decline of employment in mature industries is likely to be a permanent feature of a technological economy. The object here is to provide a framework for revitalisation. There is clearly a need to develop mechanisms which will ensure that new industries or employment generators are in place before 'sunset' industries begin their downslide. This project will seek to identify the ways in which technologies can be evaluated for their economic and employment potential, and put in place effectively in a new industry. The research has a strong 'action' orientation, with an emphasis on developing practical measures which will assist in the transformation of the region.

Ron Johnston

Theatre South 'in Residence'

THEATRE SOUTH was set up under the auspices of The University of Wollongong. Today it is a fully incorporated company but retains strong links with the University. Des Davis, its artistic director, is a senior lecturer in drama at the University, and drama students have taken part in the company's productions.

The company set out in mid-February on a month-long tour of five NSW centres with its 'in residence' programme. Theatre South 'in residence' could be described (if one talked that way) as a 'comprehensive theatre resources package'. The company

spent enough time in each centre to make available to the community a variety of experiences in theatre — a play for adult audiences, to a matinee or specialised drama session for high-school students, to participation plays for infants and primary schools.

For the grown-ups the company staged Alan Ayckbourn's brilliant comedy, *Might as Well Talk to Yourself* (or *Confusions*). This play was one of the highlights of the unit's 1981 season and will be seen in Wollongong again when the company stages a return season in May.

High schools on the tour were invited to attend matinee performances of the Ayckbourn play at a reduced rate. After each matinee there was a discussion period for students, where they could talk with the company, ask questions on the production, the company or the theatre in general. The high-school audience on tour were the first



Above: Geoff Morrell and Paul Hunt, panning for gold, in 'New-comers', Theatre South's 'Seagull' programme for primary schools



Left: Katherine Thomson as Milly, and Paul Hunt as Stewart, her fiancé, in the company's production of 'Might as Well Talk to Yourself'

to see Theatre South's new programme for high-school drama classes, *Theatreworks*. In response to requests from many drama teachers, Theatre South devised *Theatreworks* to illustrate the process by which a scripted play becomes a performance: the page to stage process. This programme plays in the schools and also involves a discussion period after the show.

Seagull, Theatre South's schools touring company, performed in many centres on the tour, both on and off the beaten track.

The tour began in Campbelltown. Cooma, Bega, Narooma and Moruya all saw performances of the main play, and from each of these towns, the company visited schools in the outlying areas.

The company returned on March 14, going straight into rehearsal for *What the Butler Saw*, Joe Orton's farce, which opens in Wollongong at the Technical College on April 15.

For the first time this year, Theatre South is offering a subscription series, giving patrons a generous discount on the regular ticket price. Subscription brochures may be obtained from Theatre South, PO Box 1144, Wollongong, or by telephoning (042) 29 7311, ext 923.

Learning about Learning

by watching young children write

IT IS the first week in December and the second to last week of the school year. Raegan, five years eight months old, sits in her kindergarten class, engrossed in writing a story. She's been thus engaged for 37 minutes. I've been sitting observing her. I wait for a pause and ask her to share what she's written. She shows me her story.

2-12-81
I are saying at my aunts
MY Edges are teh y and crot
MY dki ahd dty are suw at
Garry mum and Dad went to
Adelaide to get a new Tennis
it is an the cit the smet is red
and we went cory aret me if
I wood lik to sat behd his
trator and my stoper cam off
I aret Garry if he wood fix it
BUT HE WAS

I've been observing her every week since July so she knows what I'm going to ask her to do. She reads her piece to me, pointing to each word as she reads it.

Raegan's reading: I are staying at my aunts. My cousins are Terry and Cory. My uncle and auntie are Sue and Garry. Mum and Dad went to Adelaide to get a new tennis court. It is a hard tennis court. The cement is red and white. Cory asked me if I would like to skate behind his tractor and my stopper came off. I asked Gary if he would fix it but he was

Nicole, in the same class and the same age, is also writing. She's also been engaged in the task for the 37 minutes. Although the date is December 2, the date on Nicole's piece is November 3. She has thus been working on it for approximately a month. She numbers her last completed page, '27'. When she began a month ago her teacher and I referred to it as 'Nicole's Piece'. Now, four weeks and 27 pages later we facetiously talk about 'Nicole's Thesis'. The first few pages look like this:

Nicole 3-11-81
on The weykend
I went to Nahl
and P. P. P. Poppy
got us an oyscrei
and a pacit of
bubellgum and Tho
day aw cuzenz
came up to see
us. We went up to
The Pock we had
a swing. Wen
we went back

We Went to see
aw dnty Mell
at The covent.
aw cuzenz +
fownd a Pond.
there Was a fish
in the watter
aw cuzenz faw
a Plastic bag.
Mathyou
trod to catch him
and scot took his
thongs off.

Two months younger than Raegan and Nicole, Deanna, too, has been writing for more than half an hour. Deanna feels rather special today because she is writing at the 'TV' table, and all her composing and writing behaviour from the time that she first picked up her pencil is being captured on videotape for later analysis. The class teacher sits next to her and Deanna reads what she has written.

2-12-81
My L+E kan dah
fon tilad and
she bot me
and my brothe
Sun little kos
and she pot
Sun nahl poilell
me wen I
wet in the
pil it of
kan

Unlike Raegan she does not point with her finger.

Deanna's reading: My auntie came down from Thailand and she bought me and my brother some little cubes and she put some nail polish on me. When I went in the pool it came off.

These are impressive performances for children so young. Until recently few educators or child psychologists would expect the typical kindergarten child to be capable of 37 minutes of sustained

attention to a task as complex and as sedentary as writing.

A commonly held bit of educational lore is that five minutes exhausts the attention span of most five-six year olds, even when the object of the concentration and attention is simple and involves pleasurable activity.

Furthermore, few people would expect the average five-year-old to show as much control over, or knowledge about, the conventions of writing. Not only have these three children mastered left to right progression, the spacing conventions of words and letters, letter shapes and sizes, but they're also showing a growing control over story structure, sentence structure and some punctuation conventions.

Certainly few people would expect children so young to make such logically sound attempts to spell. Although Raegan's attempt at 'cement' ('smet') is not conventional by adult standards, the logic which underlies it is impeccable. Similarly Nicole's attempt at 'Matthew' ('Mathyou') and Deanna's 'Nail Polish' ('Nahl Polehs') display different but equally impeccable logics.

These are not wild, random guesses. They are in fact the result of very careful analysis of sound and print; one can almost follow the train of thought that each used as she tried to solve the problem of representing words in print. Just five months earlier, in July, these children's writing could not have been considered to be exceptional. If anything it was slightly underdeveloped when compared to that of other kindergarten children at the same stage of the school year.

ICAN SKIP TO SCHOOL
ICAN WALK
ICAN EAT
ICAN RUN
ICAN WALK
ICAN GO BACK TO SCHOOL

Raegan - July

I can skip
I am a girl
you can con to a
my nahl
will play yes i will play

Nicole - July

Even a cursory examination of the July and December samples indicates that there has been a significant change in these children's writing behaviour. Whereas in July they were writing rather short, relatively bland and irrelevant messages, in December their pieces were longer accounts of personally relevant experiences. While the December pieces showed a growing control of narrative story structure, the July pieces were by contrast devoid of a story line or any sense of narrative.

Perhaps the most noticeable differences between the July and December pieces is in the spelling. The July pieces, although short, and bereft of any story structure, are

spelt mostly in conventional form. The December pieces, by contrast, while longer and better structured, contain many unconventional spellings which the children have invented for themselves.

These three children are not 'exceptional', 'gifted', or 'talented'. They are average kindergarten children. Nor are they the only children in their class writing in this way. The majority of their classmates, also 'average' kindergarten children, are writing pieces that are at least equal to, and often superior to, those produced by 'our' three.

The changes which occurred in writing behaviour are a consequence of a research project currently being carried out by staff of the Centre for Studies in Literacy at Wollongong University. The project, which began approximately two years ago, set out to document what children learn about writing under conditions which are based on assumptions about learning to write which are radically different from those which are traditionally held by the majority of teachers.

Whereas educators have traditionally assumed that children could master the complex act of writing only after years of carefully structured teaching and arduous practice we started with a different assumption. For purposes of this project we started with the assumption that learning to write was in reality 'learning-how-to-mean-in-written-form'. Viewed this way, it could be assumed to be essentially the same as 'learning-to-mean-in-speech' (i.e., talk), which these children had already successfully managed. Given that learning to talk is the most singularly successful and spectacular learning achievement that the majority of children *everywhere* accomplish, it is logical to assume that under analogous conditions children should learn 'to-mean-in-writing' almost as successfully.

Accordingly we attempted to identify the factors which seemed to make learning to talk so successful. Then we tried to help teachers replicate these conditions in their writing classrooms.

The teachers who took part in this project attempted to simulate as many of these conditions as possible with respect to the 'learning-how-to-write' situation. The rooms were saturated with meaningful print such as favourite songs, poems, rhymes, weather charts, alphabet charts, name tags, labels, books, pictures, magazines, advertisements, familiar packages with print on them and so on. Teachers and children continually read these together, and played fun games with the print.

Teachers wrote in front of the children, shared rough drafts with them and demonstrated how written messages were used and created. They provided time and opportunity for writing and left the children free to write about anything they found interesting; they expected writing to occur; they encouraged the sharing of writing; they encouraged children to use their own resources to spell; they accepted approximations to conventional spellings; they gave non-threatening, positive feedback both in conferences, and by 'publishing' some of the childish pieces, and transforming them to conventional form. In other words, they simulated as closely as possible natural language learning, while the researchers stood by and observed what happened.

What Have We Learned About Learning To Write?

During the two years of observation a great many things have been, and are still being, learned but three stand out. First, observations have given a new meaning to the cliché 'individualised learning'. We have come to believe that it is not only a cliché, but it is also a tautology. It seems to us that there is no other kind of learning except the 'individualised' kind, at least with respect to writing, for no two children under observation seemed to go about the task of learning to write in quite the same way. Learning, seemed to be as idiosyncratic as their fingerprints. Rather than being passive recipients of knowledge, skills and wisdom transmitted and orchestrated by some other person, the children seemed to approach the task as a series of problem-solving episodes.

As we observed them, it seemed that each identified different problems, and each adopted different strategies to deal with them.

What intrigued us was that although the problems and problem solving strategies were unique to each child they were all leading these children toward the same end; that of writing coherent stories that others could read, using many of the conventions of written communication. By December, many of them had arrived at the same destination, always by very different routes.

For example, one child's response to her teacher's announcement in July that 'from now on you can write about anything you like, and you should try to spell words the best you can', was to start copying, word for word, from the charts around the room. For nearly 16 weeks she copied the rhymes, jingles and songs.

Then, quite unexpectedly she began producing pieces just as personal and with just as many brilliant inventions as Deanna and the others. Another child began her new-found freedom by drawing pictures and labelling them, using invented spellings from the beginning; she then moved to writing the label first, then drawing the picture it described; then she began writing stories of the Deanna and Raegan variety.

We repeatedly found children doing quite different, idiosyncratic things, and we were constantly frustrated looking for 'stages' and 'patterns of development'. Ultimately we gave up the search when we realised that there were no neat and clean stages. Each child created and solved his or her own problems, and this was how he or she learned, moving inexorably, but by different routes, to the same destination, just as when they learned to talk.

The second thing we noticed was that by the end of their kindergarten year the children were reading well beyond the expectations normally held for kindergarten children. When one observes videotapes taken of the children while they were engaged in writing, it's not hard to see why. While practising the act of writing they are both learning about, *and* practising, the skills of reading. In one seven-minute burst when writing the piece shown Deanna was blocked for the next word she wanted to write. She back-tracked and re-read 17 times what she'd already written, until the flow of language she'd generated lifted her over the blockage and she generated the word she wanted. That's a lot of practice of the skills of reading to pack into a seven minute segment! She also got some

intensive practise in phonic analysis, although no formal instruction in traditional phonics was ever given. Again, an analysis of the video of Deanna reveals how she analyses the phonemic segments of each word she wishes to spell, rolling them around her tongue and head, trying to match them with her immature knowledge of letter names and sounds. As we watched these children it became obvious that one just can't write without also reading and practising all the relevant and necessary skills of reading.

The third thing was that with respect to spelling, children moved relentlessly from invention to adult convention. The teachers who took part with us were initially concerned that invented spellings which were left uncorrected would be 'fixed' permanently in the child's mind. Our observations show this simply is not the case. Children would continually invent different spellings for the same word, often inventing a different spelling for the same word in adjacent sentences, thus demonstrating that they are not fixing wrong spellings in their heads. Rather are they employing a strategy of constantly trying out alternative spellings.

We also noticed that when they received feedback about the correct way to spell a word, through reading their own published pieces or other books, if they used that word in future writing they would spell it conventionally. What has amazed us is that in the overwhelming number of cases the conventional spelling thereafter remained stable every time they used it. Thus when Kim (aged 5.8) struggled to write about her trip to the Dubbo zoo she spelt 'donkey' as 'DOCCE'. On seeing a published version of her story she exclaimed 'that's how you spell donkey! I was close wasn't I?' She used 'donkey' in four subsequent pieces, and spelt it conventionally every time.

Similar kinds of 'a-ha' experiences were observed with many other children who saw the conventional form of a word they'd struggled with.

What Do These Results Mean?

This approach to writing seems to have a great potential for leading young learners into literacy. It also has far-reaching implications for teachers and some long-held and cherished assumptions about how learners should learn and teachers should teach.

For example, our experiences convince us that kindergarten children know a lot more about print, writing and other accoutrements of literacy than we've ever given them credit for. We're anxious to find out what happens if we teach writing this way from day 1 in school rather than from July. We have an uneasy feeling that the traditional practices used before July actually held these children back.

Finally, if our observations that learning occurs naturally as a consequence of the learner identifying and trying to resolve meaningful problems are correct, then we need to rethink our notions of what constitutes 'effective teaching'. Teaching, it seems to us, becomes a process of creating conditions that permit learners to identify and resolve meaningful problems — a view which conflicts with the popular model that equates learning with teacher control and mediation.

Brian Cambourne
Centre for Studies in Literature
The University of Wollongong



Research and the University

by the Vice-Chancellor

THE common claim of universities is that they are distinguishable from other educational institutions by their commitment to research. Some official documents go further in asserting that there is basic research and 'mission-oriented' or 'strategic' research and that the role of universities is primarily to engage in basic research.

We must beware of falling into the habit of accepting such rhetoric as unquestionably correct. It is decreasingly true, if it ever was, that universities are the only tertiary institutions engaging in research, or that other institutions do not engage in basic research. Nor is it true that universities engage primarily in basic research. In many universities the bulk of research is applied: in nearly every university a very broad range of research is undertaken.

Indeed, the term itself is a generic one. At Wollongong, as elsewhere, the term seems to be loosely applied. It seems to cover most scholarly activities other than teaching, to cover refereed articles and papers as well as experimental research; it is applied to pure and applied studies and to regional studies as well as those of international significance.

It seems to me proper that analysis, speculation and criticism as well as empirical research should be the business of universities. The truth may come as much from new insights as new data. Most existing knowledge must be regarded as provisional.

It may also be wise that accepted indices of quality be reviewed. Only refereed papers are considered acceptable, but the range of refereed papers is exceedingly wide. There must be more refined ways of assessing quality.

Another aspect is the preparation of researchers. There may be fewer differences between the heuristic processes of the humanities areas and those of sciences and technology than is often assumed. Both require disciplined reflection and creativity to take conceptualisation beyond what is known. Little is known about the preparation of individuals for this aspect of research. The process in universities relies on traditional forms of preparation, not themselves subject to a great deal of review or debate.

'Applied' research may not necessarily produce fewer fundamental insights than 'pure' research. Much important new

knowledge has come from following the chain backwards from practical problems to fundamental principles. Indeed, the perceived lack of relationship of research to community problems may stem as much from the way research agenda are developed as the research fields themselves.

Regional research surely does not necessarily simultaneously connote trivial and unimportant. The port problems of the Illawarra may be the problems of industrial ports the world over. Is it not possible to set up research studies to be locally relevant and also of international significance?

Here at Wollongong our record is good and growing. Pointers to this claim are the growing volume of research grants, the broadening list of publications and our latest collaborative research scheme with CSIRO. We have some distance to go, however, before every academic is involved in research to the full extent possible and before the record of the university evokes critical admiration. In short, we need to actively consider the ways in which the admirable individual research efforts reported elsewhere in this Gazette can be multiplied and disseminated. If research is to remain a key distinguishing characteristic of universities, there is need for active debate on campus about what should be included within that term, how quality can be increased, how members of our community can be better prepared for that role and how the overall reputation of the University in this respect can be enhanced.

Ken McKinnon

Seven-year Study Completed

MIKE DONALDSON of the Sociology Department in The University of Wollongong was feeling pleased that a major piece of research work in Papua New Guinea was finally completed. 'Kenneth Good of the University of Zambia and I started fieldwork in 1975', he said. 'We finished our field interviews and archival research in 1980'. Writing up the material had taken 20 months. 'We didn't really appreciate how far Lusaka was from Wollongong,' he said, 'but we are both very pleased with how things have turned out'.

The research was novel in that it attempted a 500-year survey of one particular area, the Eastern Highlands Province. 'Most studies of the third world have lacked this crucial historical dimension', said Mike Donaldson, 'but there is no way that social change can be truly understood, unless historical analysis is undertaken'.

'We chose the Eastern Highlands because it is one of the areas where the intrusion of capitalism has been sharpest', he said.

The study focussed on the two great articulations of modes of production, the first being the shift from taro and yam-based systems to those based on sweet potato and pig production, and the second and most recent the movement to coffee production for export to world markets.

The first articulation spanned some 300 years, proceeded unevenly over the whole region and, profound as it was in terms of socio-economic developments, remained located mainly within domestic food and fodder production.

The second transformation under colonial aegis proceeded more rapidly and totally in the areas of colonial concentration and represented a movement from the domestic to the world economy and from precapitalist to capitalist

institutions and social relations.

Donaldson felt that perhaps the major significance of the study was that it demonstrated that each production system can be properly understood only in relation to that which preceded it. 'Each mode of production grew out of and built upon the preceding systems', he said. 'The ahistoricism and the colonial bias of anthropological work has meant that this crucial dimension has been largely ignored. We're trying to redress the balance.'

The major contemporary statements contained in the study concern the rise of new peasant classes. 'It's the old, old story', said Mike Donaldson. 'Productive resources are controlled by a few, at the expense of the many'. The implantation of coffee production in the Province is closely examined as it relates to the formation and domination of modern economic and political institutions by rich farmers and leading peasant classes.

The study is currently being considered by a major publisher of third-world material.



To burn or not to burn?

The role of fire in environmental management

THE BUSHFIRES which ravaged parts of the Illawarra last summer have drawn attention once again to the highly contentious role of fire in the field of environmental management. The question is to burn or not to burn. On the one hand the excessively frequent burning of an area results in predictable changes which in the long term result in converting the area to grassland. On the other hand total elimination of fire tends to produce dense forests which, particularly in drought conditions, become potential tinder boxes.

In the Illawarra we have a very diverse range of vegetation types, from heath grasslands (which require burns every four or five years to maintain their character) to rainforests which require intervals between burns to exceed 200 years.

To complicate matters further, the Illawarra has developed a high degree of urbanisation, which calls for the reduction of fire risk in the vicinity of urban areas and the presence of careless people — themselves potential tinder boxes.

We have very little idea about the fire regimes before the arrival of the Europeans, so that we really know very little about the natural vegetation that existed, and about the degree to which an area was dependent upon fire for its maintenance.

Most observers agree that over the past 50 years or so there has been some degradation in the variety of plants growing in natural environments, such as the heathland and the dry sclerophyll scrub that covers the top of the escarpment, and much of the degradation could result from an increase in fire frequency since European settlement.

Fire management practices have swung from no burning (the Smokey Bear approach) to frequent burning, with the pendulum beginning to swing towards fewer burns. However, when a westerly wind blows up, people remember summer 1968, and 'preventative burning' starts in earnest to reduce the perceived risk to the

urban inhabitants — and never mind the effect on the environment.

It became evident that, for an area such as the Illawarra, vegetational diversity required a more rational approach to the use and control of fire if this diversity were to be maintained. That it should be maintained there seems little doubt, since the verdant natural vegetation of the region — together with the escarpment, the lake and coastline — constitutes the main attraction for visitors.

In November 1981 Dr Hugh Spencer of the Department of Biology in the University of Wollongong, in conjunction with the local South Coast Conservation Society, initiated a series of annual seminars. These would be held in the area, and prominent researchers in the field of fire ecology and bushfire control were invited, together with local experts and volunteer firefighters. That first seminar was an undoubted success and generated wide discussion on policies that should be adopted towards control-burning and the means of training future firefighters to increase their awareness of the role of fire in the area.

Just a year ago Dr Robert Whelan was

appointed as ecology lecturer in the Department of Biology. His main research interests lie in the field of fire ecology which he studied in Western Australia for his doctorate, and in the USA on a postdoctoral research fellowship. With two research students, Patrick Tap and Shiseto MiYamoto, Dr Whelan has established a research programme to investigate the effects of fire in heathlands on flora and fauna. This study will be conducted at Barren Grounds Nature Reserve.

Various researchers in Australia, and in Britain, have postulated that small patches of vegetation which escape being burned (even in a wildfire) provide a refuge for mammals. Little work has been done on insects and the way in which they survive in fires but they will presumably take refuge in a similar way. From such refuges animals are able to reinvade the burned heath as it regenerates. Although this process clearly provides a mechanism by which animal populations can survive in a fire-prone environment, very little attention has been given to the interaction between the animals and their food — the plants.

Plants in fire-prone communities are most susceptible to grazing pressure during the regeneration periods. Dr Whelan's group is investigating densities of animals in small, unburned patches of vegetation and attempting to determine the impact they have on the surrounding vegetation as it regenerates.

One important aspect of this study is its relevance to 'controlled' or 'prescription' burning. This is deliberate burning of an area with specific management objectives in mind. The objective is usually to reduce the fuel in the plant community without damaging the flora. To achieve this sort of fire, prescription burning is usually carried out in a cool season. One consequence of a cool-season fire is that it does not burn uniformly through the vegetation and many patches are left unburned. This certainly ensures the survival of mammal, and perhaps insect, populations but it may also result in unnaturally high grazing pressures.

Copies of seminar papers are available from The University of Wollongong.

Hugh Spencer

The Friends

FRIENDS of the University of Wollongong, as their title indicates, is an organisation whose aim it is to support the university in demonstrable ways. It is composed of university staff and students, graduates (one-third of the members are Wollongong graduates) and members of the community. And the extent of their interest is evident from some of the figures. Last year for example: \$49,697 in cash, \$23,440 in service to the university and \$33,000 in donated equipment — a total of \$106,137.

Recently a further \$1,800 was donated

by a number of firms: a sum that was used for the conversion of the lift in the Union Building to allow it to be used by people in wheelchairs.

Promises of support of over \$24,000 have so far been made towards a History of the Italian People of the Illawarra project. Main sponsor is the Fraternity Bowling Club which has promised \$10,000.

Important too is the news that the Membership Committee of the Friends has agreed to fund Theatre South's play, *The Birds have Flown*, by Carmel Pass and David Vance.

The total of grants and promises at this stage stands at \$134,937. Friends indeed!

Cryogenic Frost Simulator

DURING winter the Department of Mechanical Engineering in the University was approached by Rheem (Aust.) for help to design and build a suitable frost simulator for the controlled testing of solar water heaters. Cool-room-based designs have been tried in the past, but have been found unsatisfactory in that they do not simulate the 'clear air sky temperature effect'. That is, with air temperatures around 0°C, the solar collectors radiate into a clear night sky achieving a surface temperature about 3°C cooler than the air temperature (the surface of the collector tubes can be at -3°C while the air temperature is only 0°C).

Interestingly, this effect has been found to cause burst-pipe problems not only in well-recognised cold areas, such as Canberra and Berrima, but in places like Alice Springs! Arid areas, with winter night air temperatures hovering around 0°C and clear sky conditions, play havoc with unprotected solar collectors.

The simulator design called for a device suitable for testing a complete solar water heater with up to three collector panels, under a cooling cycle known as the 'worst winter profile' as recorded by the weather bureau in Canberra. This is a cooling cycle spanning 12 hours and simulating the coldest night recorded in Canberra up to the winter of 1982.

Of course, the design had to be minimum-cost and available yesterday, or at least available soon enough so that a full range of protective devices could be tested well before production was committed for winter 1983. These protective devices range from simple heating elements controlled by a thermostat to some very clever mechanical automatic drain-down valves which isolate the tank from the collectors and allow the collectors to drain out their small volume of water (approximately two litres per collector) to waste.

After some trial and error the simulator seen in the photograph was produced which can readily reproduce the required 'coldest Canberra temperature profile' including the necessary clear sky heat sink to simulate the effect alluded to earlier.

Essentially the simulator is a box measuring 3.5 m × 5 m × 2.5 m made from 200 mm thick expanded polystyrene foam cooled by liquid nitrogen with two independent controls for the air temperature and the heat sink. The very cold - 196°C - liquid nitrogen called for



John Montagner with part of the equipment he employed in simulating extremely low temperatures. Temperature of the liquid oxygen was minus 196 deg C

some care in the design of the controlling elements to prevent over-freezing.

However, with the testing programme almost complete we can report that the simulator has proved to be very effective, satisfying both the technical requirements and the financial constraints.

A. John Montagner

The Tyranny of Transport

The Tyranny of Transport is the subject of the Vice-Chancellor's Seminar for Heritage Week 1983

LAST year, the subject of the first Vice-Chancellor's Seminar was 'Conservation and Progress, are they Compatible?' It had addresses from distinguished people ranging from Mr Justice R. M. Hope, Chairman of the NSW Heritage Council as well as Chancellor of the University of Wollongong, to Murray Wilcox and Jack Munday; and it attracted a wide and varied audience.

The theme for 1983 flows naturally from last year's. Transport brings benefits and disadvantages to communities, in much the same way and in much the same pattern, as does progress generally.

The Tyranny of Transport is not simply a catching title to drag in the crowds. In many ways, transport has had a continuing destructive and restrictive effect on people and communities, and some manifestations of transport represent an externally imposed burden, or tyranny. Locally, Wollongong's transport history shows a continuing mixture of advantage and disadvantage. The 1890 rail link to Sydney allowed progress, but left a heritage of level-crossings; the freeway of the 1960s bisected suburbs and thus damaged community structures, and at the same time massively increased the noise nuisance. In 1983, the problems of coal transportation through the city and the surrounding bush

encompass the whole range of issues relating to conservation, quality of life, job creation and the economic future of the area.

Farther south in the University's area, towns (notably Kiama) face the conflicting problem of roads that bring the people to support a tourist industry but at the same time clog the town at weekends.

Throughout Australia similar areas of conflict surround the transport situation, and the Seminar will concentrate — as it did in 1982 — on both local and wider issues.

The Seminar will be held all day on Friday April 15, in the University's Pentagon Building.

After a keynote paper, the Seminar will be in the form of three sessions:

Managing transport systems

Transport and people

Transport and city structure

Speakers will present a wide range of views and approaches — academic, commercial, industrial, trade unionist, local government, planning, conservationist. The Seminar will look at specific matters: malls, bypasses and the needs of heavy industry; and general issues. It will look at alternatives to transport — not just feet, but also the feasibility of local production and other ways to reduce the need for transportation.

The Vice-Chancellor's Seminar forms an important part of the University's continuing annual contribution to Heritage

Week. This contribution will include other, and less intellectually demanding, views of our transport heritage. On Sunday April 10, 'Heritage on Wheels' at the University will include displays of old vehicles; conducted tours in decorated vintage buses of historical sites; and an inspection of the disused Ocean View Colliery at Mount Kembla. This mine was closed nearly a century ago but it has the potential to become yet another tourist and student attraction of Wollongong.

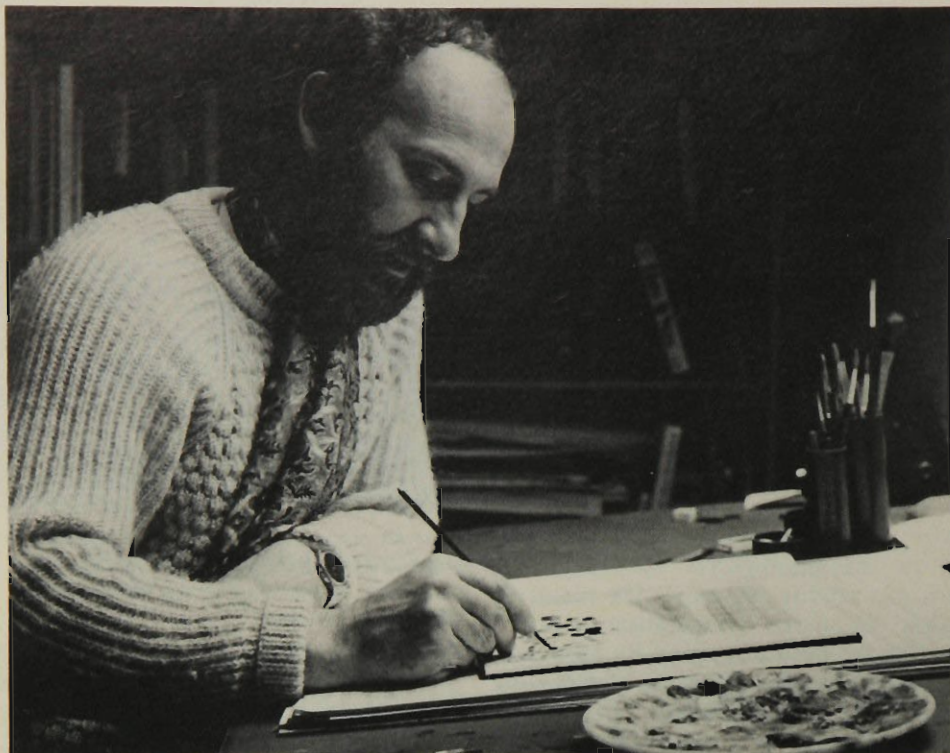
Heritage Week is one of the main times of the year when Wollongong University stresses its links with the community. Consequently the University and the Friends of the University have developed an extensive programme of events to attract people to the Campus.

These University events are developing a heritage pattern of their own. The 1983 seminar theme represents a closer examination of issues looked at more broadly in the 1982 seminar, and other patterns are emerging. Particularly, we are looking into the future: the past is important in itself, but it can illumine the future, and much of the University's Heritage Week is looking forward.

Ben Meek

A 'first' for Wollongong University this year is the appointment of a composer-in-residence during the first session. The Australian composer Ross Edwards, while 'in residence', will be working on a music-theatre piece with playwright Dorothy Hewett.

World Figure for University



COMPOSER above all, but also an academic, pianist, conductor, painter, writer and ornithologist, Edward Cowie has been appointed Professor of The University of Wollongong and Head of its School of Creative and Performing Arts. He is currently an Associate Professor and Head of School of Composition and Analysis at the University of Lancaster in Britain. He is expected to take up his appointment in the University in April.

Holding degrees of Bachelor of Music, Bachelor of Education, Bachelor of Science, Doctor of Music and Doctor of Philosophy from three English universities, Cowie is today in the front rank of composers of his generation. He is Composer/Conductor in Residence with the Royal Liverpool Philharmonic

Orchestra. Currently he is working on his second opera, commissioned jointly by the Royal Opera House, Covent Garden, and the Victorian State Opera, Melbourne. The subject of this work is Ned Kelly, the bushranger. Designer for this project, and for a television opera by Cowie on the Australian painter Egon Schiele, is Sir Sidney Nolan.

As a painter Cowie has had some 16 shows in the past 12 years or so throughout Britain, the US and West Germany. On a recent visit to Australia he displayed paintings in Sydney and Melbourne as well as in regional galleries in NSW and Victoria. The paintings are on the general theme of Ned Kelly and incorporate a great variety of Australian birds representing his response to Australia on an earlier visit.

Support for ethnic social workers

THE CENTRE for Multicultural Studies in The University of Wollongong is still today the only unit in an Australian university exclusively concerned with the problems of multiculturalism in Australia.

The centre was established in 1978 and fully staffed in 1980. Its brief differs from that of normal university departments, in that the centre is required to pursue research aimed at social change — action research. It is also intended that the staff of the centre will have a substantial involvement in local communities.

Since 1980 the centre has published

reports on questions as diverse as English language learning for adults and the occupational health of migrants. It has also taken part in such activities as establishing an ethnic liaison officer in the Port Kembla Community of Schools and providing support for ethnic social workers.

Over the past four years, too, the centre has offered a Postgraduate Diploma in Applied Multicultural Studies. In 1983 this will be upgraded to an M.A. and it is hoped also that an undergraduate diploma will be offered.

These programs cover a wide range of topics unified by the common focus on multiculturalism in the education, health and social policy areas and in the workforce.

Anyone who wants to know more should contact Michael Morrissey on 28 2401 or call at 22 Porter Street, North Wollongong.

Calendar

April 10 to 16
Heritage Week

April 10

Heritage on Wheels display of old vehicles; conducted tours in vintage buses of historical sites, inspection of disused colliery at Mount Kembla

April 15

Vice-Chancellor's Seminar: The Tyranny of Transport

April 29 (and June 24)

Council meetings

May 11 at 5.30 p.m.

Friends of the University Annual General Meeting

May 25 at 7.15 p.m.

Annual University Church Service, St Michael's Cathedral, Wollongong

August 26 to 28

First Australasian Personal Construct Psychology Conference, University campus.

Master of Studies

THE University of Wollongong has an unusual degree — called the Master of Studies. The degree offers a year of full-time or two years part-time study to enable professionals to catch up with the latest developments in their field. Programmes are now available in Accountancy, Chemistry, Computing, Education, French, Italian, Geography, Social Policy and Sociology.

Teachers, for example, may take a Master of Studies in Education, including courses which focus on the issues of schooling, learning and human development, administration and curriculum. The degree usually involves course work in subjects selected by the teacher in consultation with an academic adviser, plus a culminating project in which the teacher explores an issue related to his or her fields of professional interest and specialisation. The University's Education Department sees this kind of course structure as a valuable contribution to the teacher's further education.

Students who have already taken the Master of Studies in Education include junior and senior teachers in schools and technical colleges, school principals, school inspectors, as well as members of allied professions such as nursing and the health sciences.

The degree should be of interest to professionals who are responsible for education and training of their staffs in the range of helping professions. Such professionals are encouraged to seek further information.

Teachers and other interested people should telephone The University of Wollongong for further details. In the Education Department the course coordinator is Dr Darol Cavanagh (042) 282972. Additional information about the full range of programmes offered by the Department of Education may be obtained from other course coordinators: Dr Philip de Lacey (042) 282972, Dr Paula Hamilton (042) 282805, Ms Nina Southall (042) 282421.

Four more students of the University of Wollongong have been awarded Course Awards from the Commonwealth Department of Education, thus bringing the total for 1983 to five. Only two Wollongong university students have previously been offered CDE awards.